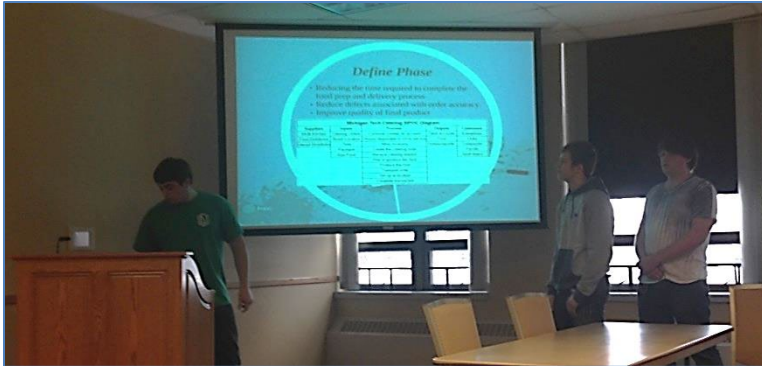


Continuous Improvement Using Lean Principles

February 2015 Update

Improving Catering Services



A team of five Michigan Tech students worked alongside Catering Services, using Lean and Six Sigma methods and tools to improve the quality of food delivered to customers. The student project was an integral part of Rick Berkey's Enterprise course, Fundamentals of Six Sigma. Rick is the Sponsored Projects Manager for Enterprise and Senior Design programs, in the new Pavlis Honors College. He is also a volunteer campus Lean facilitator

and a Lean Six Sigma Black Belt. In Rick's course, students learn and practice quality and continuous improvement methods and tools used for design, development, and process improvement, including lean manufacturing and six sigma.

The Tech students, Shane Anderson, David Swanson, Austin O'Connor, Dominic Eatherton, and David Hutchison, teamed up with catering to do a process improvement project. They began by collecting data on the different types of catering order deficiencies and their frequency of occurrence. They charted their findings on a Pareto Chart, which is a bar graph that shows the frequency of the different findings, allowing a user to quickly zoom in on the most common faults. The data directed their focus onto food quality and food timing issues.

Next, the students identified possible root cause factors of the food quality and timing problems and used a decision matrix to choose improvement options. They weighed ease of implementation, cost, simplicity, time, and personnel requirements for each option. Timing of the recipes was the clear best choice for improvement according to the matrix.

Improve Phase

Timing of the recipes was the best choice as shown in the matrix

Criterion	Importance Weighting Factor	Scheduling System	SS System	Recipe Times	Quality Check
Ease of implementation	4	5	2	8	6
Cost	2	3	7	8	3
Simplicity**	3	5	7	8	4
Implementation Time	5	5	2	7	3
Labor Consumption	1	4	6	7	3
Totals		22	24	38	19
Weighted Totals		70	59	114	60

Inputs in yellow
Outputs in green
Highest score is the best solution

In their proposed solution, the students recommended that catering services incorporate cooking and preparation times on each recipe.



The final step in any improvement event is a report out. The students gave a presentation of their project at the Auxiliary Services monthly report out. In addition to sharing and celebrating successful improvement events, Auxiliary Services uses the gathering to strengthen employee Lean skills. At this report out, the students were able to participate in an [interactive lesson on product flow](#) delivered by Robert Hiltunen, Director of Auxiliary Services.

Lean Outreach and Connections

- The fall semester president of the Leaders in Continuous Improvement student organization, Gaurav Pandit, created a current and future Value Stream Map for the Speed Swing Assembly Line at Pettibone Heavy Equipment Group in Baraga. He worked under the coaching of Dr. Linda Wanless, an Assistant Professor in Mechanical Engineering Technology, while enrolled in her Lean Manufacturing course. A Value Stream Map is a pictorial display of the steps in a process, including supporting information and cycle times.
- The Manager of Process Improvement represented Michigan Tech at a Blue Sky meeting at Dover Corporation in Chicago. The purpose of the meeting was to open a dialog about teaching students Continuous Improvement using Lean principles in alignment with industry needs for new employees' Lean knowledge and skills. Michigan Tech, Purdue, Ohio State, and Michigan State represented the academic side and Dover Corporation and Carlisle Industries were the industry participants. "Blue Sky" thinking is creative and outside the box, not limited by current thinking or beliefs; in a blue-sky meeting, the participants dream about the future without the usual time/budget/personnel constraints.
- Eleven Michigan Tech employees, representing the Executive Team areas of Academic Affairs (2), Administration (6), Research (1), and Student Affairs and Advancement (2), continue their training to become volunteer Lean facilitators for Michigan Tech. They have successfully completed five of the seven training segments, which include informal lectures, discussions, activities, and projects. The class will graduate in April 2015. When their training is complete, they will join the current [campus facilitators](#) and lead continuous improvement events, consult on Lean projects, conduct value stream map and workflow analysis, and teach and use problem solving skills and tools.
- The Michigan Tech [Continuous Improvement Blog](#) now allows readers to subscribe to the blog. When a new post is published, subscribers receive it in their e-mail. Currently, 22 people are subscribed to the blog.

Continuous Improvement Events as of January 25, 2015

Executive Team Area	Active as of 25 Jan 15	Completed since last report 1 Nov 14–25 Jan 15	Completed FY15 YTD	Completed FY14 Full Year
Academic Affairs	1	3	5	7
Administration	1	0	2	29
Financial Services and Operations	0	0	0	1
Information Services	0	0	0	1
Research	0	0	0	2
Student Affairs and Advancement	0	0	0	4
Total	2	3	7	44